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EDUCATIONAL NEEDS OF INJURY CONTROL PRACTITIONERS IN CANADA

BY

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ABSTRACT

This study identified and examined the educational needs and barriers to participation of injury control practitioners in Canada.

Respondents (308) worked in prevention, had more than 10 years experience 40% (138), (83.8%) use a computer daily, and rate their computer skills above average. Employers were health care (34.3%) and government (24.17%) with program coordinator (13.5%) the predominant position title.

Education, networking, and programming, were identified as important aspects of their work, with changing people's attitudes and lack of support for the field the greatest challenges. Major barriers to participation were lack of time (22%), resources (18.5%), and geographic distance (11.8%).

Intervention strategies and program evaluation were identified as educational needs with risk factor identification and knowledge about the major causes of injury being identified as needs to improve injury control practices.

Face-to-face workshops (61.8%) were the preferred delivery method and course content was (94.8%) the deciding factor for enrollment.

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled "Educational Needs of Injury Control Practitioners in Canada" submitted by Kathy L. Belton in partial fulfillment of the requirements for the degree of Master of Education in Adult and Higher Education.

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Dedication

This thesis is dedicated

to my parents, who helped me develop a love of lifelong learning,

to my son, Joshua and my husband, Rick

whose love, patience, encouragement and support have contributed greatly to the

completion of this research and my degree.

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CHAPTER I

THE PROBLEM

Introduction to the Problem

Thousands of Canadians are killed or injured each year as a result of predictable and preventable events that many consider to be "accidents." For those ages between the age of 1 - 45 years, injury is the country's leading cause of death and disability. In fact, for those between the age of 1 - 20, injuries account for more deaths than all other causes of death combined (Smartrisk, 1999). Every year non-fatal injuries cause 1 in 3 people to seek medical attention or leave them unable to carry out their normal activities (NCIPC, 1989).

An injury is defined as "any unintentional or intentional damage to the body resulting from exposure to thermal, mechanical, electrical, or chemical energy or from the absence of such essentials as heat or oxygen (NCIPC, 1989, p.4)." The annual cost of injury in Canada has been estimated at 8.7 billion for health care expenditures alone (Smartrisk, 1999). The magnitude of the injury issue in Canada cannot be understated.

The field of injury control involves the whole continuum of the injury event. From the prevention of injury events, support for emergency medical services, acute care management of the injured, and the rehabilitation and re-integration of individuals into society. Injury control has not been viewed as a separate distinct discipline by any of the professional groups it involves (Waller, 1985) and those working in the field often have other duties outside of the realm of injury prevention and control.

Those working in the field of injury control recognize that prevention of injuries before they occur, reduction of their severity when they occur, and/or reduction of their long term impact on the lives of Canadians are currently the best responses to these events. Typical practitioners in these responses are either hospital-based or community-based. Hospital-based practitioners include emergency response personnel, physicians, nurses, and occupational and physical therapists. These practitioners most often lessen the severity of the injury through fast response to the injury event such as emergency medical services. Community-based practitioners include representatives from organizations such as fire, police, ambulance, public health departments, insurance companies, safety councils, traffic departments, etc. These practitioners are most often involved in prevention programming. While many are involved in injury control, very few have had any formal training in this area.

Locally, regionally, provincially, and nationally, there has been recognition of the need both to increase awareness of injury issues in Canada and to increase the efforts to control what is often a silent epidemic. Experts in injury control, such as the Canadian Collaborating Centres for Injury Prevention and Control (CCIPC), have acknowledged that one of the major steps to having a health issue recognized is the building of a critical mass of knowledgeable practitioners. They believe that this "critical mass" is necessary to lever resources to build a sustainable infrastructure and ensure broad based sustainable community mobilization. Therefore, one way to increase prevention and control initiatives is to increase the number of individuals prepared with the same basic understanding of the elements of injury prevention and control:

epidemiology of injury, principles of injury control, basic injury data systems, applied research and planning methodologies, program development and implementation, and program evaluation (ACICR & Plan It Safe, 1999).

Background to the Problem

Field of Injury Prevention and Control

The field of injury prevention and control is very young. Beginning in the early 1900s, much of the theory and practice has been guided by the field of transportation (Injury Prevention Centre (IPC), 1997). Since its invention in the late 1800s the automobile became and continues to be one of the leading agents in unintentional death. Its invention also provided a developmental cornerstone for knowledge in injury control (IPC, 1997). Barely out of its infancy, the automobile caused great concern when the number of traffic injuries skyrocketed. Efforts at reducing these traffic collisions ranged from educating the driver and enforcing traffic laws to engineering better cars. The knowledge gained through these three strategies: education, enforcement and engineering has been fundamental to the development of the field of injury control.

In addition, much of the injury control efforts and research over the last century were focused on victims and the victim's shortcomings. In fact, even up to the 1960s, references to the eradication of injuries through personal responsibility can be found, such as this one from Chapman (1961).

> Once a sense of personal responsibility for accident causation can be created in the minds of people, great progress will have been

> made. Then the sequel to an accident will no longer be an orgy of self-pity for having been the unhappy victim of an uncontrollable event. Instead the sequel can be a character-building period of self-evaluation during which acts of personal stupidity, carelessness, and indifference may be identified. Hopefully, the accident-causing sequence of events will not be permitted to recur. (NCIPC, 1989)

For these reasons (the invention of the automobile and attribution of fault on human error) much of the early development of the field of IPC was focused on engineering and psychology. The 1940s research of Hugh De Haven, a World War II pilot, articulated that it was the biomechancial exchange of energy that caused the injury (IPC, 1997). His work was a fundamental step towards the crash packaging such as seatbelts and airbags among other things seen today. During this time educational strategies to overcome human error focused largely on the production and distribution of pamphlets and posters.

The involvement of the health care community in injury prevention began when Dr. John E. Gordon suggested that injuries have similar characteristics to infectious diseases such as malaria. Injuries like diseases have seasonal variations, long term trends, epidemic episodes, and demographic distributions (NCIPC, 1989).

The Centres for Disease Control in the United States and other similar health-related organizations around the globe formally recognized injuries as a major public health issue in the late 1980s (Rivera, Grossman, & Cummings, 1997). The National Academy of Sciences referred to injury as, "probably the most under-recognized major public health problem facing the nation today, and the study of injury represents unparalleled opportunities for reducing morbidity and mortality and for realizing significant savings in both financial and human

terms—all in return for a relatively modest investment (Injury Control, 1988, p. 1)." In fact, there is worldwide recognition that injuries are the leading cause of death for young adults, adolescents, and children (Barss et al, 1998).

Because of the magnitude of the injury issue and its effect on the health status of a population, injury is now largely defined as a public health problem (NCIPC, 1989). But public health is only one piece of the puzzle. Recognition of injury as a public health issue lead to increased activities and a recognition that collaboration and a multidisciplinary approach to injury by community based practitioners are most successful (NCIPC, 1989).

Unfortunately, the increased activities were not accompanied with increased training or education. Most practitioners rely on peers and trail and error to learn the science of injury prevention and control (IPC, 1996).

Epidemiology and Community Development Approaches

Adult educators operate in systems (Boone, 1985). The adult education organization is a system; the process employed in developing and implementing an educational program is a system; and the program itself is a system (Boone, 1985). The field of injury prevention and control is also a system. A system that is multisectorial and multidisciplinary. For example, public health practitioners, epidemiologists, government officials, policy makers, clinicians, engineers, economists all have roles that they can play in injury prevention and control. Educational opportunities within this system reflect either a community development or epidemiological approach as a basis for curriculum design. In

addition some educational programs in injury prevention and control offer a combined approach of community development and injury epidemiology.

Community Development

Community development is a process which encourages people to work together to identify issues and concerns and develop and carry out action plans (Pollack et al, 1992). This approach recognizes and builds on the strengths within the community and assumes that community members know best what their problems are and what solutions will work for them.

An important principle related to community development concerns the value and importance of people's experience in decisions around setting goals and developing action plans (Injury Prevention Centre (IPC), 1997). People are the experts of their own lives and will know best what can work for them. Another cornerstone of community development is working cooperatively to attain goals that would not be possible if undertaken individually.

Community development process includes identifying problems, setting priorities, designing and implementing activities to address their priority issue and evaluation (Kalnins et al, 1992). The Injury Prevention Centre (1996) developed a 10 Step model for community-based injury prevention programming. The 10-steps are:

1. Identify and examine community injury issues
2. Choose a priority issue for action
3. Select ways to address the identified issue
4. Create a program action plan
5. Build a team for action
6. Develop program methods and materials
7. Train the team for action
8. Launch the program

9. Guide and support the program
10. Evaluate and celebrate the program

The steps are intended to only guide the process of planning. Even through the steps are numbered they are intended to be flexible in terms of order. Also within some planning processes some steps maybe repeated several times (IPC, 1996).

Epidemiology Model

The epidemiology basis for injury prevention and control originates with prevention of infectious diseases. Epidemiology is the study of the distribution and determinants of health-related events in a defined population and its application to the control of events (Last, 1990). In contrast to a clinical approach, which focuses on the individual, epidemiology focuses on groups. For example, a community or specific segment of the population that has a higher injury rate than the general population.

The development of a theoretical and practical framework for the science of injury prevention using epidemiology has led to the recognition that injuries are not accidents but a health problem (Barss et al, 1998). An epidemiological model examines injuries like a disease. Injuries are examined in a framework that examines all aspects of an injury event from the antecedents to the after effects. As mentioned earlier, a community development model focuses on building networks or coalitions that can mobilize resources to address the injury issue. Both are valuable content to injury prevention and control practitioners.

William Haddon Jr. developed a matrix model for injury control. The model is shown in Figure 1. This framework is a useful tool for analysis to

identify intervention points. By identifying the factors within the phases of an injury event practitioners can better intervene. For example, in this boating example mandatory personal floatation devices could be considered to prevent boating related drownings.

Figure 1. The Haddon Matrix for injury prevention and control: Boating incident

	Individual	Vector Injury Agent Factors	Environment Physical/Social
Pre-event	• Alcohol/drug use • Age • Wearing a lifejacket	• Water current • Dangerous areas well marked	• Boating traffic • Weather conditions • Lifeguards on duty
Event	• Swimming ability • Type of clothing	• Temperature and current of water • Dangerous fish or plants • Salt vs fresh water • Speed of boat	• Rescue equipment in boat • Can boat float if capsized • Presence of others
Post-event	• Age • Alcohol/drug use • Length of time in water	• Temperature of water • Water current	• Distance from land • Distance from medical assistance

Programs for Injury Prevention & Control

Training related to injury prevention and control is very limited, with little if any, certification available in Canada. In addition, few programs at the university level in Canada address injury prevention and control in any depth below the graduate level. At the graduate level, courses are scarce and for many geographically inaccessible. Several summer institutes are offered in the United States and Sweden, however, these are mostly out of geographical and economic reach for most injury practitioners in Canada (ACICR & Plan It Safe, 1999). In addition, they tend to focus on injury issues such as interpersonal violence and the disparity between ethic groups that do not reflect the injury issues in Canada (ACICR & Plan It Safe, 1999).

While some injury control related content is covered in non-university based professional programs; it is most often lumped in with other health related or promotion issues and not addressed as a content area in and of itself. Community members, such as police, fire, and public health practitioners, who become involved in injury control, are often reluctant to enroll in a university level course but find no other options in their community or region. They are most often left to learn the art and science of injury prevention and control on their own or to rely highly on their peers for professional development.

In 1999/00, in response to requests for a training program for injury prevention and control practitioners a review of injury prevention and control programs was conducted by the Alberta Centre for Injury Control & Research (ACICR, 2000). Initially programs were identified by staff of the ACICR and the Collaborating Centres for Injury Prevention and Control. In addition, the review process was discussed at national and international meetings to ensure that all possible programs were identified. It found that programs in injury prevention and control are offered in a variety of formats and offered different perspectives.

The review identified eleven courses from educational institutions worldwide. Courses were identified in the United States, Australia, Canada, Finland, Sweden, Belgium, and the United Kingdom. The content of the courses reviewed was somewhat similar in terms of core content covered, with the most common element being injury prevention. Ten of the eleven courses also presented content on both unintentional and intentional injuries. Seven of the courses dealt with injury epidemiology. Some of these presented the majority of

the course material within an epidemiological model and others used community development as the framework for delivery (ACICR, 2000).

The majority of the courses also presented content on intervention strategies and some courses were presented within the framework of strategies to prevent injuries. Only two of the courses addressed the whole continuum of injury control, including emergency medical services, acute care, and rehabilitation.

The delivery mechanism for these courses ranged from face-to-face instruction to instruction via the Internet. Course length also varied from 5 to 14 days to full time and single term university courses. In general, the shorter courses are targeted at those new to the field of injury prevention and control or to those practitioners that want to increase their knowledge level in one particular area.

The level of student evaluation attached to courses ranged from nothing to very formal evaluations such as examinations, research projects, and papers.

Table 1 presents a comparison of three educational offerings in injury prevention and control examined in the review. These three courses represent a cross-section of the courses that are available. They represent International, North American and Canadian perspectives. Also, each has a different delivery method and certification process.

Table 1

Comparison of Three Injury Prevention and Control Courses

Component	Course 1	Course 2	Course 3
Format	• 1 day - classroom format	• 16 days (2 exams) - internet based course	• 5 days (major assignment plus course work) - classroom format
Content	• Introduction, 10 step model and community assessment	• Introduction and overview of unintentional injury issue	• Overview and principles of injury prevention
	• Injury statistics	• Injury epidemiology	• Injury epidemiology and research methods
	• Injury prevention theory	• Motor Vehicle Injuries - Epidemiology & Interventions	• Prevention strategies and countermeasures
	• Injury prevention interventions	• Intentional Injuries	• National and state injury prevention strategies and intersectorial collaboration
	• Team and coalition building	• Emergency Medical Systems, Trauma Care Systems & Rehabilitation	• Evaluation issues
		• Injuries in Low Income Countries	• Cost of injuries
			• Community safety and violence prevention
			• Advocacy

Canadian Context

Alberta witnessed a mobilization of human and financial resources in the late 1980s with an increase in activities in the area of injury prevention (ACICR & Plan It Safe, 1999). The Injury Prevention Centre, a special department of the University of Alberta, Capital Health Authority located in Edmonton, Alberta became aware of the need for training in the science of injury prevention after completing a brief needs assessment in 1996. In response to the needs assessment a one-day workshop entitled Injury Prevention 101 was developed and delivered across Alberta. This one-day workshop focused on how to identify and examine community injury issues, address selected priority issues, establish local coalitions and develop, implement, and evaluate injury prevention programs (IPC, 1996).

By the mid 1990s, a critical mass had formed due in part to the efforts of the Injury Prevention Centre to provide community practitioners with the knowledge and skills necessary to develop and evaluate injury prevention programs through these one-day workshops. "This same strategy used consistently across Canada should provide the development of a common syntax, establishment of a stronger network of injury prevention and control practitioners, and encourage a scientific approach to injury prevention and control, including an evidence-based approach to selection of intervention strategies, and ensuring adequate evaluation and dissemination (ACICR & Plan It Safe, 1999)."

A National Curriculum

Given this environment, the issues that arise are twofold. First, how best to accomplish an educational initiative to meet the needs of the Canadian injury control and prevention practitioner, and two, what delivery format would be most accessible. As a way of improving educational opportunities, educators must analyze the requirements of the occupation and become familiar with existing professional development needs (Colette, 1994). Once these issues have been recognized the development of appropriate learning opportunities can be implemented (Todd, 1987).

The Alberta Centre for Injury Control and Research (ACICR) is in a unique position to undertake these issues in the development of a national curriculum for injury prevention and control. ACICR's 10-year history of developing and delivering injury prevention programs as the Injury Prevention Centre is the most established in Canada. This researcher has been on staff in various capacities since the Centre's inception. The current staff of the ACICR comes from varied backgrounds: elementary education, health records, emergency nursing, political science, general sciences, and the social sciences. The areas of expertise of the ACICR staff include communications, data analysis, trauma systems, advocacy, policy analysis, research and adult education. ACICR also has solid infrastructure support as a provincial centre within the Department of Public Health Science, Faculty of Medicine & Dentistry, University of Alberta.

Health Canada through the Population Health Fund Submission of 1999 has provided funding for the development of a Canadian Injury Control Curriculum Project. In addition, ACICR has the partnership support of the

Canadian Collaborative Centres for Injury Prevention and Control (CCCIPC), which are:

(a) British Columbia Injury Research & Prevention Unit

(b) IM-PACT: Injuries Manitoba - Prevention of Adolescent and Childhood Trauma

(c) Nova Scotia Child Safety and Injury Prevention Unit

(d) Plan It Safe - Children's Hospital of Eastern Ontario

(e) Saskatchewan Institute for Prevention of Handicaps

(f) Securite Dans Les Muex De Vie

Each of the Centres that make up the CCCIPC has a mandate for injury prevention or control or both, although their area of focus and expertise varies. Three of the Centres focus on children and youth injury prevention, one has research as a primary focus, and another focuses on a whole range of prevention activities that is broader than injuries.

How does an organization, such as ACICR with a provincial mandate for injury control establish content and delivery mechanism when it is faced with such a wide variety of practitioners, geographical concerns, and a vast range of educational requirements? An answer can be found in the determination of the educational needs of injury prevention and control practitioners. Professional development should "be planned round strategic concerns that link continuing professional development to evaluations of practice and to analyses of forthcoming practice demands (Todd, 1987, p.7)." In addition, "to be relevant to daily practice, continuing professional education must be tied to what practitioners actually do (Queeney, 1987, p.28)."

An examination of the needs of injury prevention and control practitioners from across Canada will assist in setting direction for the development of a national curriculum for injury control in Canada. Recommendations from this study are important in making decisions regarding content, format, and delivery mechanism for a Canadian curriculum in injury prevention and control. In addition, the knowledge gleaned from the examination of needs will increase the awareness of the need for a prescribed educational program, which may lead to increased professionalism of the field.

Understanding the perceived needs of injury prevention and control practitioners will also provide some insights into the theoretical knowledge of the occupation. The needs identified by community-based practitioners will undoubtedly emphasize the principles and aspects of the field of injury prevention and control that are most relevant to their practice.

Purpose of the Study

The purpose of this descriptive study was to identify and examine the perceived educational needs of injury prevention and control practitioners in Canada and what perceived barriers to participation in educational opportunities exist. Secondly, this study will assist in the development of a national curriculum for injury control. The research questions are:

1. What are the educational needs of injury prevention and control practitioners across Canada?
2. What are the barriers faced by injury prevention and control practitioners in Canada when considering educational opportunities?

Definition of Terms

The following terminology is used throughout the study.

Injury prevention: "Efforts to forestall or prevent events that might result in injuries" (NCIPC, 1989, p. 297).

Injury control: Efforts to modify the consequences of potentially injury-producing events to prevent the injury or reduce the severity of injury and medical care and rehabilitation directed at the injured to enable them to become a functioning member of society. (NCIPC, 1989).

Educational needs: The gaps "between a professional's body of knowledge, skills, and abilities and the individual's capability to perform the required tasks at hand as well as those planned for the future" (Dubin, 1990, p.10).

Organization of the Thesis

Chapter I has presented the context to injury control in Canada, purpose of the study and the two research questions that will be investigated. In addition, definition of terms, and the contribution to theory and practice are outlined.

Chapter II focuses on the relevant literature in the area of needs assessment and the field of injury prevention and control. The review also examines the necessary skills, abilities, and knowledge required of competent IPC practitioners.

Chapter III provides a description of the research methodology including a discussion of the population, data collection instrument, and procedures for data collection and analysis.

Chapter IV presents the results of the research study and Chapter V provides a summary of and discussion of the results. As well, conclusions, recommendations and implications of the study are offered.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

The purpose of this study was to identify and examine the educational needs of injury prevention and control practitioners. The results of this study will be used in the development of a national curriculum for injury prevention and control for Canada. In order to provide a context, this chapter reviews relevant literature in three sections. The first section presents an overview of needs assessment theory and methodology. It also examines the factors influencing needs assessment. Section two presents a brief overview of the development of injury prevention and control education from epidemiological and community development perspectives. It also examines the necessary skills, abilities, and knowledge required for an injury prevention and control practitioner. The final section focuses on the barriers to education.

Needs Assessment

This section provides an overview of the definition, historical perspectives and theory, methodology and factors influencing the needs assessment process.

Definitions

A needs assessment is defined by Witkin and Altschuld (1995) as "a systematic set of procedures undertaken for the purpose of setting priorities and

making decisions about program or organizational improvement and allocation of resources" (p. 4).

Rothwell and Sredl (1992) describe needs assessments as being either deficiency or opportunity oriented. Deficiency oriented needs assessments, the traditional needs assessment model, are those designed to identify gaps in performance. Opportunity oriented needs assessments seek to identify performance gaps that are likely to occur in the future to facilitate a proactive approach to address these gaps (Rothwell and Sredl, 1992). The concepts of *need* and *assessment* are fundamental to these definitions of needs assessment. Both of the above definitions denote a process of examination and reflection.

Tyler (1971) defines needs as the difference between the current state and an expected state. The gap between these two states is what constitutes a need. For example, an expected state in injury prevention and control education may be that practitioners will know the theory of Haddon's Matrix and be able to apply the matrix in their work. Analysis of practitioners' knowledge and skills may reveal that practitioners lack the level of understanding regarding the matrix to enable them to make informed decisions based on Matrix methodology.

Sork and Cafarella (1989) point out that the definition of a need as a gap is often confused within the literature on needs assessment with the concept "of need as that which is required or desired to bring about a change in the condition or state of affairs of the learner (p. 236)." The focus of the assessment they maintain is in finding what is required to bridge the gap between the need and the desired state.

Differentiation between needs, interests, and demands is also a challenge within the context of a needs assessment. Mocker and Spear (1979) note that all three (needs, interests, and demands) are related to learner motivation and participation. Needs tend to be perceived as more imperative than interests and demands are just that, demands. The authors regard interests as preferences. These authors also note interests may actually represent unconscious or unrecognized needs. If this is true, the real issue within a needs assessment then becomes how to determine if a perceived need is actually a real need or just a casual interest.

Historical Perspective and Theory

The use of needs assessments for training and education are well represented in the literature, popular press, and the Internet. Topics range from the needs of adult English as a Second Language learners (Weddel & VanDuzer, 1997) to the needs of Geriatric Service Providers (Educational Gerontology, 1998). A needs assessment fulfills two primary functions. First it provides insights for selecting topics and second, it provides a basis for curriculum planning and instruction. In addition, needs assessments have been used in almost every field to determine the training or educational needs of people within that given field.

Needs assessments have also been used to justify and focus program-planning decisions. In fact, the majority of program planning models developed in the last forty-five years have included a component of needs assessment (Sork and Cafferella, 1989). The crucial role of a needs assessment within program

planning in adult education is not lost on any program development model. In all cases the determination of learner needs are at the forefront of the activities named (Sork and Cafferella, 1989).

Since the twentieth century John Dewey and his disciples have advocated a learner-focused basis for education as opposed to the pre-dominant reliance on the subject-centered approach (Atwood & Ellis, 1971). Although both models use the concept of learner need to map out program planning, the focus is totally different.

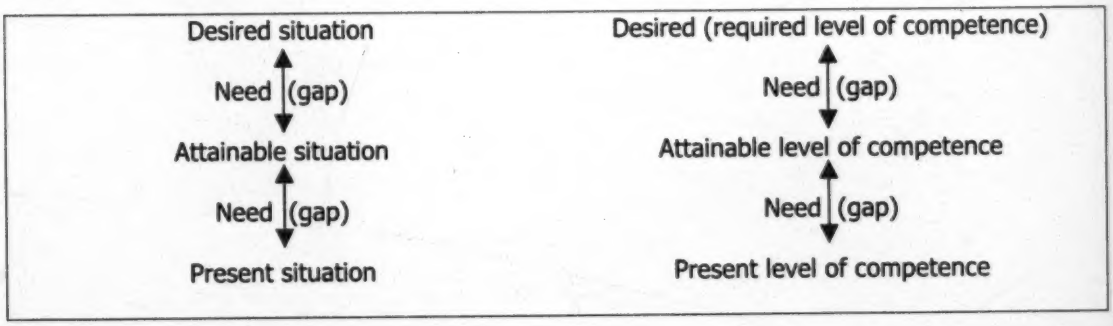
The concept of educational need is woven through out a learner focused or naturalistic model (Walker, 1971). In addition, objectives are not defined by the needs but by the "search for better educational programs (Mazmanian, 1980, p. 5)". Robinson and Taylor (Brookfield, 1986) make the distinction between the classical approach and the learner centered approach even clearer. They maintain that it is the question of "who decides what are the appropriate objectives for a course" that is at the centre of the dichotomy between these two models (Brookfield, 1986, p.211). This "needs approach" is now the pre-dominant approach to education especially education for adults (Atwood and Ellis, 1971).

The discussion and debate over perceived needs and prescribed needs has been highlighted by Brookfield (1983) among others (Brackaus, 1984 & Monnette, 1977). Felt or perceived needs are those needs that are the wants, desires, and preferences of the learners. Prescribed needs are those needs that educators decide individuals, groups, or communities need.

Several additional distinctions within the literature are made with respect to the concept of need. In a review of programs for adults Monnette (1977) identified the following four types of needs: basic human needs, felt or expressed needs, normative needs, and comparative needs. Basic human needs are those needs that "are fundamental to the human condition-social justice, survival, shelter, expression/immortality (Monnette, 1977, p.71)." Felt or expressed needs are often discussed in terms of wants. Much of the programming done in health education is to fulfill these felt needs. Normative needs implies a gap or deficiency between what is and what is desired. Collins (1991) defines these normative needs as the gap between "a designated desirable standard and one that actually exists (p.61)." They are based on the educator's beliefs that learners' need certain skills, knowledge, and behaviours (Monnette, 1977). Most of the continuing professional education and training programs are driven by normative needs since the impetus behind these programs is to update skills, stay ahead, etc (Baker, 1976).

Baker (1976) provides a visual illustration of the general concept of a need that also illustrates a normative need.

Figure 2. Needs Hierarchy



Comparing characteristics of adult groups who receive a service with those who do not is defining a comparative need. The basis for comparative needs is the foundation for adult education as a social movement. Selman (1991) documented several examples of programs based on comparative needs such as Frontier College and the Antigonish Movement. As Bergevin (1967) points out, "an effective program of adult education should consider the needs and related interests of the adult learner and attempt to discover and meet his real needs as well as the needs of his social order" (p.141). Kaufman (1992) has repeatedly stressed that needs assessments have to align with societal values and goals. When there are conflicting and competing values the "what should be" is most often expressed by strongly held values and beliefs.

Atwood and Ellis (1971) make a distinction between what they call educational needs and real educational needs. Educational needs are said to be "needs that can be satisfied by means of a learning experience (p.212)." Real educational needs for Atwood and Ellis are those needs that are characterized by the following four aspects:

1. The recognition that a change in the status quo is necessary to reach a more desirable state.
2. The recognition that something is lacking.
3. The realization that there is something that can be done.
4. The need can be satisfied through a learning experience. (p.212)

Influencing Factors

Scissons (1985) makes the following points about needs and the process of needs assessment. First is the point that needs do not exist. Needs are constructs and they are inferred on the basis of some kind of empirical data or evidence. There is no right or wrong way of conducting a needs assessment since there are really no needs. Many needs in education for adults are self-estimates and as such are inferred based on perceptions. Methods used for needs assessment range from the highly empirical to the intuition of practitioners and programmers. The definition and prioritizing of any need is highly subjective. Individuals and organizations may vary in how they rank or weigh the importance of particular needs. Scissons (1985) notes that "a primary job of the needs assessor is to be very clear on what definition is being used in any given needs assessment and to be able to justify this definition (p. 106)." Many needs assessments in adult education are self-estimates and as such reflect only one source of data. This form of needs assessment is the dominant one in practice (Scissons, 1985). As well, (Scissons, 1985) makes the point that even the highest ranked need may not be worth bothering about (p.107)." These issues reflect the complexity of the concept of needs assessment.

Griffith (1978) posits that the concept of need within adult education is rhetoric and that the stated function or outcome of most programs is phrased in such a way as to infer that the program meets a need, either adults' needs or the needs of the community. Some adult educators feel uneasy about combining both felt needs and prescribed needs (Brookfield, 1986). Brookfield maintains that if adult educators focus solely on the felt needs approach they will become

consumer focused and reactive. This takes away the fundamental premise of adult education to change society for the good. The adult educator becomes a technician rather than a mentor and coach.

Secondary to finding what is required is the process of placing the identified needs in some order of priority—assessing the needs (Mazmanian, 1980). Various techniques and methods have been used to determine priorities. "Most techniques require the specification of criteria to be used to determine priorities and the systematic application of criteria to all the needs identified (Sork and Caffarella, 1989, p. 237)." Knowles (1980) prefers using a filter analogy and three criteria to establish priority. Other authors (Caffarella, 1988; Kemerer & Schroeder, 1983; and Witkin, 1984) use ranking, rating, and graphic representation systems in order to make decisions regarding which needs are priority. The overall purpose of priority setting within a needs assessment context to is provide a rationale for resource allocation that is acceptable to not only the learner's but also the institution and the educator (Sork and Caffarella, 1989).

There has been lots of discussion regarding the value-laden concept of need (Monnette, 1977; Lawson, 1979; Brackaus, 1984) and its use to justify programs. The identification of a desired state and the setting of priorities implies some type of value judgement made on behalf of those with the needs. What is viewed as the desired state is most often based on the values and beliefs of those involved in the planning. Determining the current state is usually based on data gathered through a variety of means such as questionnaires, self-assessments, document reviews, and tests. The search for methods and

techniques that provide an objective way to identify the desired state have focused on futuring techniques such as the Delphi technique

Literature on planning programs responsibility and making ethically informed decisions regarding which needs are to be focused on in the planning of programs has only begun to surface (Collins, 1991). Cervero and Wilson (1994) in their work on planning responsibly for adult education provide adult educators with a new lens from which to view the broader program planning process and needs assessments. The influence of those who hold the power within the program planning and needs assessment framework can not be overlooked. The power differential between those conducting the needs assessment and those whose needs are being assessed has to be addressed. Cervero and Wilson (1994) maintain that this power differential can be dealt with through an awareness of the issue and through negotiation with the program planner acting on behalf of those with the needs. Boyle (1981) indicates that as a program planner an educator has to be conscious of needs on four different levels — learner, educator, institution, and societal. The amount of negotiation needed to reconcile these four levels can range from minimal to extraordinary.

Methodology

Kaufman and English (1979) classified needs assessments as ranging from alpha to zeta, depending on the breadth.

The consequences of ineffective needs assessment are immediate and direct on education programs for adults. Simerly (1991) listed the ten most

common negative reactions by adult learners. The top cited compliant was that the educational program did not meet their perceived needs.

Given the variety of settings and topics addressed one would expect there to be considerable variation among the methods used. This is however not the case. Throughout the literature, the following four constants in conducting a needs assessment became evident (Ratzburg, 1999; Sherry & Morse, 1995).

1. Completing a gap analysis.
2. Identifying and ranking of priorities.
3. Determining what the real causes of the gap or need is.
4. Identifying possible solutions.

Tyler (1971) identifies three sources of information in which to gather information that may suggest the educational needs of learners. First and the primary source is the learner him or herself. Learners are well equipped to provide information on their interests, sociodemographic characteristics, and their environment, among other things. A second source is the culture in which the learner lives and by examining the "contemporary life" of the learner programs can be designed for the social context (Boone, 1985). The third source is subject matter specialists, and it is the most often used and criticized source of information on the needs of learners for proposing too highly technical and specialized content (Boone, 1985).

The value of a needs assessment process lies in not only identifying what the needs are, but also determining if there is a root cause behind the need. For example, the fulfillment of an identified need for an educational program on injury prevention and control may not be a solution if the intended audience can

not access the program. Needs assessments typically identify more needs than can be addressed with the available resources.

Sork and Caffarella (1989) also identified that although there is plenty written about the value of conducting a through needs assessment very few practitioners complete one. Reasons given for not doing needs assessment are the time required to complete one, that programs are based on potential demand regardless of demonstrated need, and that programs are more often than not based on the resources available.

There appears to be a discrepancy between how needs assessment is depicted and how they are fulfilled in the real world. Mattimore Knudson (1983) and Sork (1986) have posited that it maybe time to re-visit the theory of needs assessment to make it better reflect the practice of education and training.

A vast amount of literature can be found on the area of needs assessment. Much of it is repetitious and sets up needs assessment as a process within the larger context of program development within adult education. The reduction of needs assessment to a purely technical function ignores the dynamic and human aspect of education. What is lacking is the relationship between the act of needs assessment and responsibility of the educator.

Within the literature on needs assessment there is very little direction given regarding whose needs — learner, educator, institution, or society's should be given the greatest weight and what criteria should be used as a deciding factor. The process of objective priority setting as part of needs assessment provides a way to allocate resources that will be acceptable and

justifiable. Techniques for priority setting typically use the application of pre-determined criteria to all identified needs.

The element of context is also underrepresented in the literature. The importance of context within a needs assessment cannot be over looked. The context in which we live as learners and educators influences our perceptions of our needs and also our attitudes, knowledge, and skills. Cervero and Wilson (1994) and Collins (1991) address the element of context but only from the aspect of accountability and responsibility and perhaps that is the best framework available to at this time. Theorists such as Paulo Freire (1970) have shown us, there is no neutral education and that education that does not seek to change conditions reinforces the existing conditions. The same could be said for needs assessments.

Barriers to Adult Education

According to Mocker and Spear (1979) "adults participate in educational activities because they feel they should, because they want to, or because they must in order to serve some other goal (p. 93)." Knowing why adults participate can help educators better meet learner needs. Conversely, if educators can identify and remove or lessen barriers to participation learner needs may be better met. According to an adult education survey approximately 80% of adults in Canada do not participate (Selman, 1991). The relationship between barriers and participation is not a simple cause and effect relationship (Selman, 1991). Due to the complex nature of adult lives removal of identified barriers does not guarantee enrollment.

Cross (1981) divided barriers to participation into three categories: situational, dispostional, and institutional. Situational barriers are those barriers due to the circumstances of the potential learner, things such as disposable income and appropriate transportation. Dispositional barriers are those things that can be linked to the personality of an individual such as feelings of inadequacy. Institutional barriers reflect the operating principles of an institution or organization. Prerequisites, class location, and scheduling of courses are examples of institutional operating practices that are not intended to be barriers but due to circumstances may be for some learners. Research with individuals from social groups known for low participation has shown (Selman, 1991) that to a large extent institutional barriers are the most influential.

Darkenwald and Merriam (1982) categorized barriers into four groups: institutional, informational, psychological, and personal/situational. Personal/situational barriers are such as time and financial constraints, geographic distance, being a member of a special population, and being place bound (tied to a certain place due to other commitments). Access to information regarding educational activities or counseling on opportunities are examples of informational barriers. Psychological barriers include such things as insecurity, peer pressure, lack of motivation, and cultural devaluation of education. Institutional barriers are those barriers that affect the delivery of educational activities. Lack of cooperation among institutions, availability of courses, "red tape," and poor service from institution personnel including instructors.

The Northwest Action Agenda Project (1986) investigated the barriers to rural adult education in seven northwest states in America. It found that the

primary barriers to rural adult education are time constraints, limited variety and availability of classes, and limited access to degree programs and credit programs (McDaniel et al, 1986).

Barriers to Injury Prevention and Control Practitioners

Literature on the barriers to injury prevention and control practitioners is non-existent. This section draws largely on the literature on barriers for health professionals.

Hebert (1999) found that courses, which are relevant and applicable to work and practice, were the most important factor. Herbert (1999) identified factors that affect health professionals decisions to enroll in courses. Course content, availability of on-line courses, credentials of instructors, access to instructors, and cost were somewhat influential in decisions to enroll. In addition, Hebert's study revealed that logistics of taking courses, flexibility to enable students to continue working, time commitment required, length of course, and linking the course to some credited outcome were factors that influenced enrollment. The role of employer support through experiential learning was also emphasized (Hebert, 1999).

Interest in education credit for courses suggested that health professionals want to achieve some level of accreditation. In Hebert's study, credit for courses towards a certificate was the first choice of respondents, with a Master's degree as a second choice. These preferences are influenced by the respondents current level of education (Hebert, 1999).

Generally, the health professionals who took part in Hebert's (1999) study were frequent and skillful users of computer technology. A large majority of the respondents indicated that they use a computer daily in their work or at home (Hebert, 1999).

Respondents in Hebert's (1999) study also cited two main benefits of taking courses:

1. "Current skill development to keep up with the changes in the workplace.
2. Preparing for future employment where new or different skills would be required (p. 4)."

Skills, Abilities and Knowledge

This section reviews literature which identifies the necessary skills, abilities, and knowledge required of injury prevention and control practitioners. The state of injury prevention and control is still relatively young and even with the growing support no comprehensive training program exists (ACICR, 2000). The field of injury prevention and control is made up of a great number of separate disciplines; the literature for this section is reviewed within the framework of the existing injury prevention and control educational programs.

As discussed earlier a review of eleven programs in injury prevention and control was conducted by the ACICR in 1999/00. This review revealed several similarities in terms of content areas across the programs. These similarities can be used to identify the necessary skills and abilities for competent performance by injury prevention and control practitioners. The highlighted cells of the table

reflect areas of greatest agreement of content among the injury prevention and control programs.

Table 2

Common Elements in Educational Programs

	Program										
Element	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
Principles of injury prevention	X	X	X	X	X	X	X	X	X		X
Injury epidemiology		X				X	X	X	X	X	X
Cost of injury		X				X	X	X	X	X	X
Problem identification	X	X			X	X	X	X	X	X	X
Data collection	X	X			X	X				X	X
Injury data systems	X	X		X	X	X	X	X	X		X
Injury surveillance						X			X	X	X
Research methodology		X			X	X		X	X	X	X
Intervention strategies	X	X	X	X	X		X	X	X	X	X
Identification of strategies	X	X	X		X				X		X
Program evaluation	X	X			X			X	X	X	X
Advocacy	X	X	X	X	X			X	X	X	X

From this table, we can assume that subject matter specialists, experts in the field of injury prevention and control who developed these programs, deem that the principles of injury prevention, intervention strategies, problem identification, injury data systems and advocacy are the most important content areas for injury prevention and control.

Summary

This chapter has presented a short review of the literature relating to the history and issues' surrounding needs assessment. Literature on barriers to educational opportunities was also explored.

Although little of the literature explores the topic of educational needs for injury prevention and control practitioners, the case is made for much more research in order to create meaningful learning opportunities.

An examination of the educational needs in the face of the development of a national curriculum in injury prevention and control for Canada highlights the need for more research in this area.

Chapter III

METHODOLOGY

The purpose of this study was to determine the educational needs of injury prevention and control practitioners in Canada. It also investigated the perceived barriers to and preferred formats and delivery methods for educational programs in injury prevention and control.

Population and Sample

Potential respondents for the pilot study project were identified by the regional representatives on the expert advisory group that was established from the membership of the Canadian Collaborative Centres for Injury Prevention and Control (CCCIPC). Each of the seven expert advisory panel members identified in Chapter I were asked to identify injury control practitioners from their organizational mail list who represented the spectrum of practitioners in their region. The identified practitioners were to represent the wide range of experience and disciplines in injury prevention and control. Efforts were made by the CCCIPC to ensure adequate coverage of all geographical areas in Canada. Member organizations contacted colleagues in the regions not represented on the CCCIPC.

The degree to which the respondents truly reflect the population of injury prevention and control practitioners is not known. What is known is that this type of purposeful sampling yields information rich data (Gall, Borg, & Gall, 1996).

The survey sample consisted of injury prevention and control practitioners who were identified by the Canadian Collaborating Centres for Injury Prevention and Control (CCCIPC). Each of the regional advisory group members of the CCCIPC identified between 50-200 potential respondents.

Design

In developing the survey questionnaire several crucial aspects were considered. As discussed in Chapter I, injury prevention and control practitioners typically have heavy workloads, punctuated with shifting priorities and other areas of responsibility outside of injury control. For these reasons the survey tool had to be straightforward and concise. It was considered essential that survey completion take no longer than twenty minutes.

The two main categories of injury control practitioners to whom the survey was directed included community-based and hospital-based. In addition, non-traditional injury-control practitioners, those professionals not usually associated with the practice of injury control such as enforcement and architects were also surveyed. To truly be effective injury prevention and control efforts need to incorporate other disciplines (Waller, 1985). With the educational preparation and work experience being diverse it was necessary to consider the impact that language would have on the response rate. The challenge was to develop a survey tool that would not be offensive to the injury control practitioner who is highly experienced or lesser experienced. Gall, Borg and Gall (1996) note that the more salient a questionnaire content is to respondents the response rate is higher and the accuracy of the information received increases.

Also, they note that when designing a questionnaire consider that, "a good understanding of your respondents so that you can use language that they understand, so that you can obtain all the information you need without exhausting their patience, and so that the items engage their interest and willingness to respond honestly (Gall et al, 1996, p.295)." The "Guidelines for Designing a Questionnaire" noted in Gall, Borg and Gall (1996) also facilitated the development of the questionnaire.

The questions in this instrument were based on an on-going literature review on needs assessment, and from personal experience. Feedback and suggestions from the CCCIPC expert advisory group and colleagues from the Department of Educational Policy Studies were used to refine the instrument through two review processes. The final instrument was composed of four parts: demographic information, barrier issues, content issues, and delivery issues.

The first component of the survey was designed to gain insight into the work histories and general information of the respondents. Questions #1, #2, #3, #4, #5, and #6 focused on the occupation, educational background, geographic location, type of employer, computer use, years of experience in the field and area of expertise within the field of injury prevention and control. The format of these questions was forced choice and required the respondents to check off an appropriate response.

The next component of the survey was developed for the purpose of finding out what the respondent's perceptions were regarding the challenges within the field of injury control and the barriers to educational opportunities. Questions #7, #8, and #9 asked respondents to describe the challenges faced

by injury prevention and control practitioners. Question #7 and #8 asked respondents to comment on the most important aspect of work and the biggest difficulty in the field of injury prevention and control, respectively. Question #9 solicited feedback on what challenges practitioner's experienced in their work in injury prevention and control. All three of these questions were open response items. The answers to these questions would provide some evidence regarding the assumption that injury control practitioners require and want some formal education in the field. It was posited that education and formal training would be identified through an examination of the important aspects of the work and difficulties in the field.

Questions #10 and #11 focused on barriers for injury prevention and control practitioners and experiences respondents have had with educational opportunities in injury control. In question #10 a list of six structured items was provided which was developed from the literature on barriers to education. The last response in Question #10 (other) encouraged respondents to identify any other barriers that were not listed in the structured responses. Question #11 asked respondents to identify any educational activities they participated in and who the provider was for the past two years.

The third component of the survey was developed to solicit feedback about perceived topic and subject areas. Questions #12, #13, #14, #15 and #17 were designed to gather respondent perceptions regarding the type, subject areas, and content areas needed in an educational opportunity in injury control. Questions #12 and #13 focused on identifying the type of educational program that would best help the respondent and their colleagues, respectively, to

perform their duties. Question #14 was formulated in order to identify the broad topic areas practitioners felt were a priority, while #15 sought feedback on priority areas for improving practice within injury prevention and control. Question #17 provided respondents with an opportunity to identify any additional educational priorities through an open response format.

Questions #16 and #18 focused on delivery mechanisms and defining elements when considering enrollment. In question #16 a list of six structured items identifying a delivery format was provided. The last choice in Question #16 (other) encouraged respondents to identify any other delivery mechanism that were not listed in the structured responses. Question #18 solicited feedback from the respondents regarding the importance of items that influence the decision to enroll in educational opportunities. A five-point scale was used with 1 reflecting low importance and 5 reflecting high importance. As in question #16, opportunity was given for the respondents to identify items that were not in the list of structured items.

Question #19 offered respondents an opportunity to provide any additional comments regarding the development of a national curriculum.

The final assessment tool was comprised of nineteen questions and consisted of multiple choice, scale ratings, and open-ended responses.

Pilot Test of the Questionnaire

After several revisions to the questionnaire (Appendix A) a final draft with the cover sheet (Appendix B) was pilot tested with the staff of the Alberta Centre for Injury Control and Research (ACICR). As discussed in Chapter I this group

was chosen because of its proximity to the researcher and because it closely approximates the potential respondents in terms of experienced and non-or limited experience in the field of injury prevention and control. The current staff of the ACICR varies in terms of educational background and area of expertise, years of experience, and computer expertise. The educational backgrounds vary from political science, education, sociology, and nursing. At the time of the survey, years of experience in the field range from 12 years to 4 months. In terms of computer use again a portion of the ACICR staff are very comfortable with using more complex programs such as SPSS and ACCESS while others are only becoming familiar with basic word processing functions.

The purpose of the pilot test was to determine or improve: (a) the length of time required for completion, (b) the clarity of instruction, (c) the clarity of format, and (d) the clarity of the questions.

In total 15 questionnaires were distributed and 12 were returned. Respondents indicated that it took approximately 10 - 15 minutes to complete the survey. No questions were identified as problematic. However, some of the respondents felt unqualified to answer questions #14 and #15, relating to topic and content areas, due to their newness to the field of IPC. This problem was discussed with the CCCIPC advisory group and my supervisor. To encourage practitioners who are new to the field of injury prevention and control to feel prepared to complete the survey and on the recommendation of the CCCIPC a background document outlining the field of injury prevention and control was developed and reviewed by the pilot test group (Appendix C).

Data Collection

Each CCCIPC regional representative received via email and Canada Post a copy of the survey instrument, appendix and cover letter for duplication and distribution to injury prevention and control practitioners in their region. Prior to distribution, the CCCIPC regional representative discussed earlier in Chapter I, gave each survey a unique identifier. The purpose of coding the surveys was to facilitate follow-up on non-responses with an additional mailing. After coding each regional CCIPC representative then distributed via Canada Post research packages to the injury prevention and control practitioners in their regions. Distribution of the research packages took place in early 2000. A covering letter (from the regional CCCIPC representative), the survey questionnaire, and the appendix to survey (developed for those new to the field) were included.

The covering letter was designed to persuade the respondents that the study was of importance and that their answers were crucial. It was brief, outlined the purpose and significance of the study, indicated a date for return, assured confidentiality, offered a contact number for more information, and thanked potential respondents. Respondents were instructed to return the survey to the Alberta Centre for Injury Control and Research via mail or fax. Having one central location for questionnaire collection was to facilitate faster data entry. Only for the region of Quebec did the surveys not come directly to the researcher. To facilitate speedy translation of the completed surveys, the surveys in Quebec were sent back to the regional CCCIPC representative who then translated the responses and forwarded a translated version to the ACICR.

Identification of non-respondents was done by having each CCCIPC regional representative develop a list of the unique identifiers from the surveys prior to distribution. Upon receipt of a questionnaire at the ACICR - the Alberta CCCIPC regional representative recorded the unique identifiers. Periodically, each regional CCCIPC representative was provided with a list of the unique identifiers received for his/her region. This enabled the CCCIPC representatives to identify non-respondents by comparing the list of identifiers provided by the Alberta CCCIPC representative with their original distribution list. A follow-up package was then sent to the non-respondents.

Confidentiality in the study was preserved by having one person in each region, the regional advisory group representative, deal with the unique identifiers which represented the study sample. At no time did this researcher have access to the regional mail lists with the corresponding unique identifiers.

Data Analysis

An ACICR research assistant entered surveys into a Microsoft Access 97 database developed by this researcher. Numerically coded questions were analyzed using the Statistical Package for the Social Sciences (SPSS). Data were summarized through the use of descriptive statistics such as frequency distributions and measures of central tendency. Qualitative questions were entered in a word processing package and were analyzed to identify recurring themes. A process of reviewing and labeling the comments was used to identify the themes. In order to eliminate bias or misinterpretation of comments a

colleague reviewed both the comments and identified themes. There were no striking dissimilarities.

Summary

This chapter has presented a description of the methodology used in this study. This is a descriptive study based on the use of a questionnaire as the data collection instrument. The survey method was chosen as the research technique due to concerns and constraints. The population, sample, design, pilot testing and data analysis methods were discussed.

CHAPTER IV

THE FINDINGS

This chapter presents the findings of the survey administered to injury prevention and control practitioners from across Canada, which examined the perceived educational needs and barriers. It is organized in four sections. The first section reviews the demographic data collected from the survey. The second section examines perceived challenges of the field and barriers to educational opportunities. The third section examines the respondents identified needs in the context of content issues. Finally, the fourth section reviews the issues related to program delivery and enrollment.

Demographics

Of the 1052 surveys distributed, a total of 364 were received for a return rate of 34.6%. The ACICR Senior Associate, Dr. Peter Rothe, makes extensive use of survey formats and according to him an acceptable return rate for a survey across occupations is generally 30 to 40 % (personal communication, 7 April 2000). Thus, the study's return rate of 34.6% approximates an acceptable return rate.

As shown in Table 3, Alberta and Saskatchewan were the only two regions who responded with a response rate of more than 50 percent, 58.6% and 54.9%.

Table 3

Response Rate by Region

Region	Surveys Distributed	Surveys Received	Response Rate
British Columbia	200	49	24.5%
Alberta	157	92	58.6%
Saskatchewan	51	28	54.9%
Manitoba	161	50	31.0%
Ontario	200	62	31.0%
Quebec	197	62	31.5%
Nova Scotia	31	12	38.7%
Northwest Territories*	40	7	17.5%
Yukon*	15	2	13.33%
Total	**1052**	**364**	**34.6%**

* Surveys were distributed by Alberta CCCIPC representative.

As can be seen in Table 4, the position title of Program Coordinator was chosen most often as the type of employment (13.5% (49)). Public health nurse was identified by 40 (11%) and physician was identified 29 (8%) of respondents. Twenty-seven (7.4%) respondents labeled themselves as IPC coordinators and another 15 (4.1%) were health promotion coordinators. The "other" category was chosen by 79 (21.7%) of the respondents. A review of the descriptors provided by the respondents showed that many of the descriptors provided were an amalgamation of two categories provided on the survey, for example, "physician and researcher." Themes that emerged from the analysis of the remaining position titles reflected an emphasis on the management of IPC

activities and positions that deal with environmental issues and inspection services.

Almost 35 percent (125) of respondents indicated that they were employed in the health care sector. Another 24.17 percent of respondents' (88) were employed in some level of government. Twenty-eight (7.7%) of respondents indicated their employer was a non-profit organization.

A breakdown of employment and employer by region is located in Table 16. Regional differences were readily apparent with Quebec being the only region to have a significant proportion of their respondents being physicians (15, 24.2%). In addition, Saskatchewan was the only region that had a significant response from the emergency medical services sector (8, 28.6%).

Table 4

Employment and Employers Represented in the Study

Employment		Employer	
Type	**N(%)**	**Type**	**N(%)**
Program Coordinator	49(13.5)	Regional Health	65(17.9)
Public Health Nurse	40(11.0)	Provincial Government	41(11.3)
Physician	29(8.0)	Non-profit Org.	40(11.0)
IPC Coordinator	27(7.4)	Acute Care Hospital	30(8.2)
Educator	20(5.5)	Community Health	30(8.2)
Emergency Medical	18(4.9)	Municipal Government	29(8.0)
Consultant	17(4.7)	Academic	28(7.7)
Researcher	16(4.4)	Industry/Business	15(4.1)
Health Promotion	15(4.1)	Community Agency	12(3.3)
Police Officer	7(1.9)	Federal Government	12(3.3)
Fireman	7(1.9)	Self-employed	8(2.2)
Acute Care Nurse	7(1.9)	Regional Government	6(1.6)
Safe Community	6(1.6)	Professional Assoc.	2(0.5)
Rehabilitation	6(1.6)	Advocacy	1(0.3)
Social Services	5(1.4)	Other	39(10.7)
Engineer	5(1.4)	Missing	6(1.6)
Student	4(1.1)	Total	364(100.0)
Volunteer	2(0.5)		
Data Analyst	2(0.5)		
Other	79(21.7)		
Missing	3(0.8)		
Total	364(100.0)		

Two hundred and eighty five (78.4%) of the respondents indicated that they have educational preparation at the bachelor degree level or higher. Nursing was the most prominent specialization at the bachelor degree level. At the graduate level the health field and education were the main focus of study.

Table 5

Educational Background

Education	
Type	**N(%)**
High School	3(0.8)
Technical Certificate	2(0.5)
Certificate	21(5.8)
Professional Diploma	46(12.6)
Bachelors	156(42.9)
Masters	71(19.5)
Ph.D.	21(5.8)
MD	37(10.2)
Other	7(1.9)
Total	364(100.0)

Three hundred and five respondents (83.8%) indicated that they use a computer on a daily basis at work. Two hundred and fifty-two respondents also indicated that they use a computer outside of work on a weekly (107 – 29.4%) or daily (145 – 39.8%) basis. As shown in Table 6, Ontario (56.5%) and Alberta (44.6%) have the highest percentage of respondents indicating they use a

computer outside of work on a daily basis. The NWT and Quebec had the highest percentage of respondents indicating that they use a computer outside of work on a weekly basis, 57.1 and 40.3 per cent respectively.

Table 6

Weekly and Daily Computer Use by Region

Location	Computer Use at Work		Computer Use Outside Work	
	N	(%)	N	(%)
British Columbia				
Weekly	2	(4.1)	12	(24.5)
Daily	44	(89.8)	17	(34.7)
Alberta				
Weekly	3	(3.3)	30	(32.6)
Daily	86	(93.5)	41	(44.6)
Saskatchewan				
Weekly	4	(17.9)	7	(25.0)
Daily	19	(67.9)	8	(28.6)
Manitoba				
Weekly	3	(6.0)	12	(24.0)
Daily	36	(72.0)	17	(34.0)
Ontario				
Weekly	4	(6.5)	13	(21.0)
Daily	55	(88.7)	35	(56.5)
Quebec				
Weekly	9	(14.5)	25	(40.3)
Daily	46	(74.2)	19	(30.6)

(table continues)

Nova Scotia				
Weekly	0	(0.0)	4	(33.3)
Daily	10	(83.3)	4	(33.3)
NWT				
Weekly	0	(0.0)	4	(57.1)
Daily	7	(100.0)	2	(28.6)
Yukon				
Weekly	0	(0.0)	0	(0.0)
Daily	2	(100.0)	2	(100.0)

Table 7 shows that most respondents feel they have average skills in word processing, and in using Internet and email technologies.

Table 7

Respondents Self-reported Computer Skill Level

Computer Program	Word Processing N(%)	Spreadsheet N(%)	Database N(%)	Internet N(%)	Email N(%)	Power Point N(%)
No Skill	18(4.9)	109(29.9)	114(31.1)	23(6.3)	20(5.5)	130(35.7)
Some Skill	50(13.7)	128(35.2)	136(37.4)	74(20.3)	33(9.1)	84(23.1)
Average Skill	178(48.9)	90(24.7)	81(22.3)	182(50.0)	189 (51.9)	90(24.7)
Highly Skilled	114(31.1)	28(7.7)	23(6.3)	82(22.5)	119(32.7)	40(11.0)
Missing	4(1.1)	9(2.5)	10(2.7)	3(.8)	3(.8)	20(5.5)
Total	364(100)	364(100)	364(100)	364(100)	364(100)	364(100)

Almost thirty-eight percent (138) of the respondents indicated that they had been involved in the field of injury prevention and control for over 10 years.

With a further 53 respondents (14.6%) indicating that they had been in the field between 7 and 10 years. Just over one-quarter of respondents 95 (26.1%) indicated that they had only between 1 to 3 years of experience in IPC. Generally the regions followed this pattern with the exception of Saskatchewan and Ontario where the majority of the respondents indicated that they have only 1 to 3 years of involvement in IPC, (12 (42.9%) and 24 (38.7%)) respectively.

Table 8

Years of Experience by Region

Location	**Length of Involvement with Injury Prevention and Control N(%)**						
	Never	1 - 3 yrs.	4 - 6 yrs.	7 - 10 yrs.	> 10 yrs.	Missing	Total
British Columbia	1(2.0)	9(18.4)	8(16.3)	13(26.5)	18(36.7)	-	49(100.0)
Alberta	1(1.1)	26(28.3)	17(18.5)	10(10.9)	38(41.3)	-	92(100.0)
Saskatchewan	-	12(42.9)	9(32.1)	3(10.7)	4(14.3)	-	28(100.0)
Manitoba	-	9(18.0)	8(16.0)	7(14.0)	26(52.0)	-	50(100.0)
Ontario	-	24(38.7)	10(16.1)	15(24.2)	12(19.4)	1(1.6)	62(100.0)
Quebec	8(12.9)	10(16.1)	12(19.4)	3(4.8)	29(46.8)	-	62(100.0)
Nova Scotia	-	2(16.7)	2(16.7)	-	8(66.7)	-	12(100.0)
NWT	-	3(42.9)	1(14.3)	1(14.3)	2(28.6)	-	7(100.0)
Yukon	-	-	-	1(50.0)	1(50.0)	-	2(100.0)
Total	10(2.7)	95(26.1)	67(18.4)	53(14.6)	138(37.9)	1(0.3)	364(100.0)

Overall, the majority of respondents were new to the field, less than 3 years experience, or had more that 10 years experience in the field of injury control.

Respondents were asked to indicate which areas of injury control they were involved (see Table 9). The area of prevention was by far the area in which most respondents were involved (308 or 84.6%) with advocacy and research activities next highest, 31.0% (113) and 28.8% (105), in the spectrum of injury control respectively. The other primary areas of injury control were indicated by respondents as areas of involvement as follows: emergency medical services, 19.5%; acute care, 15.9%; and rehabilitation, 14%.

Table 9

Area of Involvement by Number of Total Respondents

Area of Involvement	**N (%) of total respondents**
Prevention	308 (84.6)
Advocacy	113 (31.0)
Research	105 (28.8)
Other	79 (21.7)
Emergency Medical Services	71 (19.5)
Acute Care	58 (15.9)
Rehabilitation	51 (14.0)
None	5 (1.4)

Perceived Challenges and Barriers

Themes arising from the analysis of responses regarding the most important aspect of their work were education and awareness, mobilization and networking, programming, and research. Education and awareness was identified as a need to "increase people's understanding and awareness. " In addition, several respondents indicated that this need to increase understanding

and awareness about IPC was both within the organizations that they work in and the general public.

The theme of mobilization and networking was viewed as an internal issue within the field of IPC but it also extended to the communities in which practitioners are delivering their programs and policies. Quotes include "networking and mobilizing funds," "influencing my agency and other key players to focus resources and energy" and "developing partnerships with various community agencies."

The issues around the area of IPC programming ranged from identifying best practices to implementation. One respondent identified it as simply the "effective delivery of injury prevention programs."

The fourth theme that became apparent was that of research. Respondents identified research as an important part of IPC. Research was presented as more than just traditional etiology research. The importance of behavioural research and evaluation research also became apparent through the theme analysis.

The respondents were also asked to identify what was the biggest difficulty in improving a population's safety and reducing the effects of injury. Two themes emerged from the responses — changing people's attitudes and behaviours and the lack of support for injury prevention and control activities. Identification of effective measures to change people's attitudes and behaviours was perceived by the respondents as a huge difficulty. Many respondents indicated that they need effective education and awareness as means to change

attitudes and behaviours. One respondent however noted that there has been an over-reliance on awareness and education.

The issues around the lack of support for injury prevention and control efforts were identified by the respondents as a lack of management and government support, funding, and coordinated effort in program delivery. Individual comments related to the lack of focus at the provincial and national levels and coordinated efforts and resources on issues. Consistent with this was that when asked about their own difficulties in injury prevention and control the themes that emerged were support, funding, resources and time constraints.

The analysis of the ranking of barriers yielded three distinct groupings by percentage. The top two ranked barriers were time constraints (22.0%) and lack of financial resources (18.4%). A lack of knowledge about courses and geographic distance were indicated as barriers 9.9 percent and 8.5 percent of the time respectively. When the barriers were examined from the position of second ranked barrier, the ordering of the four number one ranked barriers varied slightly. Lack of financial resources, time constraints, geographic distance and not knowing about educational opportunities in IPC was on the third ranking.

Table 10

Barriers to Participation

Barriers	Ranking 1 N(%)	Ranking 2 N(%)	Ranking 3 N(%)
Lack of time	80(22.0)	57(15.7)	48(13.2)
Lack of financial resources	67(18.4)	76(20.9)	40(11.0)
Lack of knowledge	36(9.9)	29(8.0)	31(8.5)
Geographic distance	31(8.5)	43(11.8)	43(11.8)
Focus did not match needs	24(6.6)	18(4.9)	42(11.5)
Other	16(4.4)	2(0.5)	1(0.3)
Lack of employer support	7(1.9)	17(4.7)	32(8.8)
Not Codeable/Left blank	103(28.3)	122(33.5)	127(34.8)
Total	364(100.0)	364(100.0)	364(100.00)

As Table 11 shows this pattern is consistent across the regions.

Table 11

Barriers to Participation by Region

Barriers	BC N(%)	AB N(%)	SK N(%)	MB N(%)	ON N(%)	QC N(%)	NS N(%)	NWT N(%)	YN N(%)
Lack of time	14(28.6)	18(19.6)	4(14.3)	16(32.0)	8(12.9)	15(24.2)	3(25.0)	1(14.3)	1(50.0)
Lack of financial resources	11(22.4)	12(13.0)	10(35.7)	4(8.0)	20(32.3)	5(8.1)	3(25.0)	1(14.3)	1(50.0)
Lack of knowledge	4(8.2)	6(6.5)	3(10.7)	7(14.0)	6(9.7)	6(9.7)	2(16.7)		-
Geographic distance	2(4.1)	9(9.8)	4(14.3)	7(14.0)	5(8.1)	3(4.8)	-	1(14.3)	-
Focus did not match needs	5(10.2)	7(7.6)	3(10.7)	2(4.0)	1(1.6)	6(9.7)	-		-
Other	7(14.3)	33(35.8)	-	10(20.0)	18(29.0)	18(29.0)	4(33.3)	1(14.3)	-
Lack of employer support	1(2.0)	-	1(3.6)	2(4.0)	1(1.6)	2(3.2)	-	-	-
Not Codeable/Left blank	5(10.2)	7(7.6)	3(10.7)	2(4.0)	3(4.8)	5(8.0)	-	3(42.9)	-
Total (100.0%)	49	92	28	50	62	62	12	7	2

Two hundred and ninety-five (81.04%) respondents indicated that they had participated in some form of safety related or injury prevention and control educational activity over the past two years. Short courses, conferences and teleconferences were most often cited.

Overall the barriers of time, resources, and geographic distance were identified separately; it should be noted that these three appear to be interrelated. For example, a lack of resources effects the ability to travel and the ability to hire additional staff to allow time for educational opportunities.

Perceived Content Needs

When asked what type of educational curriculum would help respondents perform their job duties, themes that emerged reflected a strong emphasis on structure and delivery mechanisms, and the need for current and reliable information. Flexibility in terms of the structure and delivery mechanism to accommodate the variety of IPC practitioners and the environments in which they work was seen as a high need as evidenced by respondent comments such as, "very practical and broad-based modules." Although there was no one subject or topic area that emerged from the analysis there was an underlying concept of evidence-based information. The respondents indicated that they wanted relevant information that is based on best evidence.

In terms of what respondents felt would help the job performance of colleagues; themes that emerged were similar to those noted for themselves — flexibility of the curriculum and quality of information. In addition some

respondents indicated that their colleagues needed very basic information regarding IPC.

In order to identify which topic areas IPC practitioners needed, respondents were asked to rate how much of a priority certain topic areas were using a Likert scale: (1) - low priority, (2) - somewhat a priority, (3) - average priority, (4) above average, and (5) very important. As seen in Table 13, when all topic areas were examined for responses of "above average" and "high priority, " intervention strategies (65.9%), program evaluation (55.5%), injury statistics (49.7%), and program implementation (45.1%) were rated the highest. Following these four topic areas were, in descending order, cost of injury, injury surveillance, community development, principles in injury control, program planning, and health promotion theory. The area of communications was the only additional topic area that was suggested repeatedly.

Table 12

Topic Areas by Level of Importance

Topic Areas	Low priority	Somewhat a priority	Average Priority	Above Average	High Priority
Intervention Strategies	15(4.1)	22(6.0)	68(18.7)	102(28.0)	138(37.9)
Program Evaluation	27(7.4)	32(8.8)	80(22.0)	76(20.9)	126(34.6)
Injury Statistics	22(6.0)	46(12.6)	92(25.3)	88(24.2)	93(25.5)
Program Implementation	36(9.9)	36(9.9)	91(25.0)	84(23.1)	80(22.0)
Cost of Injury	33(9.1)	55(15.1)	86(23.6)	83(22.8)	79(21.7)
Injury Surveillance	33(9.1)	52(14.3)	89(24.5)	87(23.9)	75(20.6)
Community Development	40(11.0)	35(9.6)	88(24.2)	80(22.0)	81(22.3)
Principles of Injury Control	31(8.5)	46(12.6)	100(27.5)	84(23.1)	74(20.3)

Program Planning	49(13.5)	48(13.2)	86(23.6)	66(18.1)	88(24.2)
Health Promotion Theory	47(12.9)	56(15.4)	94(25.8)	75(20.6)	54(14.8)

When specific topics were analyzed for level of importance, above average and high importance, in terms of improving safety-related/injury-control practices respondents chose: risk factor identification (79.4%), major causes of injury (78.3%), determining causes of injury (75.3%), and countermeasure/intervention selection (73.6%) as above average or high importance most often. Behaviour change models was chosen 68.1 percent of the time as above average or high importance. The remaining topics ranged from 58.8 percent (injury statistics) to 34.6 percent (injury definition). The majority of the suggestions for other topics that were important to improving practices of IPC practitioners focused on the premise of best practice information, e.g. specific injury issues such as suicide and motor vehicle.

Table 13

Specific Content by Ranked Importance

Specific Content	Low	Somewhat	Average	Above Average	High
Risk Factor Identification	4(1.1)	12(3.3)	46(12.6)	126(34.6)	163(44.8)
Major Causes of Injury	5(1.4)	9(2.5)	54(14.8)	135(37.1)	150(41.2)
Determining injury causes	4(1.1)	9(2.5)	64(17.6)	128(35.2)	146(40.1)
Countermeasure selection	4(1.1)	9(2.5)	64(17.6)	123(33.8)	145(39.8)
Behaviour Change Models	4(1.1)	24(6.6)	62(17.0)	109(29.9)	139(38.2)
Injury Statistics	4(1.1)	28(7.7)	105(28.8)	129(35.4)	85(23.4)
Sources of Injury Data	11(3.0)	33(9.1)	107(29.4)	114(31.3)	86(23.6)
Surveillance Systems	16(4.4)	34(9.3)	114(31.3)	96(26.4)	87(23.9)
Disabilities	6(1.8)	36(9.9)	104(28.6)	127(34.9)	63(17.3)
History of strategies	15(4.1)	27(7.4)	114(31.3)	112(30.8)	82(22.5)
Injury Triangle	14(3.8)	27(7.4)	116(31.9)	112(30.8)	66(18.1)
Violence	23(6.3)	41(11.3)	88(24.2)	103(28.3)	94(25.8)
Injury Definition	33(9.1)	60(16.5)	125(34.3)	67(18.4)	59(16.2)

Factors Relating to Program Delivery and Enrollment

The respondents were asked to select a delivery mechanism that would be most successful in terms of meeting the learning outcomes of participants of an educational program in IPC. Over 60 % (225, 61.8%) indicated that face-to-face workshops would be most successful. Another 11.3 % (41) indicated that an Internet based program would be preferred and only 25 (6.9%) indicated a preference for a full or part-time credit program. Comments made in the other

category regarding delivery mechanism reflected a strong focus on using a combination of the delivery mechanisms.

Table 14

Preferred Delivery Mechanism

Delivery Mechanism	N	%
Face-to-face	225	61.8
Internet-based	41	11.3
Full or part-time credit program	25	6.9
Video-conferencing	21	5.8
Distance Education	20	5.5
Other	20	5.5
Summer School	7	1.9
Missing	5	1.4
Total	364	100.0

When asked to rate elements related to the delivery of an educational program such as cost, content, quality of instructors, etc. in terms of importance when deciding whether to enroll in an educational offering, 94.8 % (345) of these injury prevention and control respondents indicated that course content was of above average or high importance. Three hundred and seventeen (87.1%) of respondents felt that the quality of instructors was also of above average or high importance. The following three elements, time commitment (71.7%), employer support (69%), and location (68.4%), were also rated of above average or high importance.

Table 15

Factors Influencing Enrollment by Ranked Importance

Factors	Low	Somewhat	Average	Above Average	High
Course Content	-	2(0.5)	10(2.7)	73(20.1)	272(74.7)
Quality of Instructors	2(0.5)	1(0.3)	35(9.6)	114(31.3)	203(55.8)
Employer Support	12(3.3)	16(4.4)	75(20.6)	95(26.1)	156(42.9)
Location(away from home)	9(2.5)	14(3.8)	68(18.7)	104(28.6)	145(39.8)
Time required	3(0.8)	17(4.7)	60(16.5)	120(33.0)	141(38.7)
Cost	10(2.7)	24(6.6)	99(27.2)	99(27.2)	111(30.5)
Access to Instructors	16(4.4)	35(9.6)	95(26.1)	124(34.1)	80(22.0)
Course Credit	71(19.5)	61(16.8)	93(25.5)	71(19.5)	56(15.4)
Self-paced Schedule	29(8.0)	56(15.4)	134(36.8)	71(19.5)	55(15.1)
Availability of On-line	58(15.9)	71(19.5)	102(28.0)	68(18.7)	52(14.3)

Relevance and application of theory to practice were the themes arising from the additional items listed by respondents as deciding factors when enrolling in an educational opportunity.

Themes arising from the respondents suggestions for other educational priorities for the National Curriculum were that it be Canadian focused in terms of content and that it provide the basis for a more coordinated approach to IPC in Canada. Respondents indicated that there is a need to share information and to network.

In addition, the responses reflect the general frustration level within the field due to a lack of resources including educational opportunities e.g. "most

agencies delivering these services are non-profit/ government funded resources are an issue", "please consider cost," and "resources available at the federal, provincial and municipal level." In addition, themes from the responses reflect that many of the respondents feel that "input of those in the field" is vital to the development of a national curriculum.

Summary

This chapter presented the finding of the study. Survey demographics indicate that 364 individuals responded to the survey, a response rate of 34.6%. The respondents chose the position title of Program Coordinator (13.5%) most often. Almost 35 percent of the respondents indicated that they were employed in the health care sector. The majority of the respondents indicated that they have educational preparation at the bachelor degree level or higher. Almost 84 percent of respondents indicated daily computer use. Over 35 percent of the respondents indicated that they have ten years or more experience in injury control. Prevention was indicated by 308 respondents as an area of involvement within the field of injury control. The subsequent activities of research and advocacy were also indicated as major areas of involvement, 28.8% and 31.0% respectively.

Respondents indicated that the most important aspects of their work are education and awareness, mobilization and networking, programming, and research. Changing attitudes and behaviours were the common themes emerging as the greatest challenges.

Respondents also indicated a level of frustration with the lack of support for injury prevention and control. Lack of time, lack of financial resources, and geographic distance were identified as the biggest barriers to participation.

Respondents were reluctant to identify a particular type of educational curriculum that would help them and their colleagues but did emphasis the importance of flexibility and the need for reliable evidence based information. Intervention strategies and risk factor identification were identified, as the areas of greatest need in terms of topic and subject areas.

The majority of the respondents indicated that their preferred method of delivery was face-to-face and that course content was the factor that influenced enrollment the most.

CHAPTER V

SUMMARY, DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to identify and examine the perceived educational needs of injury prevention and control practitioners in Canada and what perceived barriers to participation in educational opportunities exist.

A survey based on the literature on needs assessment, expertise of the member organizations of the Canadian Collaborating Centres for Injury Prevention and Control and colleagues from the Department of Educational Policy Studies, and personal experience was used to design a questionnaire to collect information in four areas. These areas are: (a) demographics, (b) perceived challenges and barriers, (c) perceived content needs, and (d) factors relating to delivery and enrollment. This chapter summarizes the findings, draws conclusions, and discusses recommendations for addressing the perceived needs and barriers of injury prevention and control practitioners in Canada. It also suggests areas for further study.

Summary of Findings

The summary of the finding of this study is organized in four sections. The first section summarizes demographic information. The next three sections present a summary of the information collected under the three areas.

Demographic Information

Prevention was indicated as the area where most of the respondents (308) worked with program coordinator (13.5%), public health nurse (11%), and physician (8%) as the position titles most often selected. Respondents most often indicated that they were employed in the health care sector (34.3%) and government (24.17%), (83.8%) use a computer on a daily basis, and that their computer skills overall were above average. Almost 40% (138) of respondents indicated that they have 10 years or more experience in the field of injury prevention and control.

Perceived challenges and barriers

Thematic analysis revealed that respondents feel that the most important aspects of their work were education, networking, programming, and research. In addition, marketing the field was also important. Overall, the greatest challenges these injury prevention and control practitioners face are changing people's attitudes and behaviours and the lack of support for the field. In addition, the major barriers to participation in educational opportunities were lack of time (22%), resources (18.5%), and geographic distance (11.8%).

Perceived content needs

Respondents felt that the type of curriculum that would be most valuable would be one that is flexible and is based on delivery of best practice information. Intervention strategies, program evaluation, injury statistics, and program implementation were ranked the highest in terms of being a priority

area in educational needs. In terms of educational needs to improve injury control practices, risk factor identification, knowledge about the major causes of injury, determining the causes of injury and countermeasure/intervention selection were identified as most important.

Factors relating to delivery and enrollment

The majority of respondents indicated that face-to-face workshops (61.8%) were the preferred delivery method. Course content was selected by respondents (94.8%) as the primary deciding factor for enrollment.

Discussion of the Findings

The findings of the study are discussed under the same topic headings as in the previous section of this chapter.

Demographic Information

In this study only 27 of the respondents referred to him/herself as injury prevention and control coordinators. The majority of the respondents (49,13.5%) chose the position title of Program Coordinator that may reflect the diversity of the position. Overall, the respondents were well educated with less than 20 per cent of them having a professional diploma or less and for the most part (83.8%) they were computer literate. This use of computer technology was also a finding of Herbert's (1999) study. As discussed in Chapter II, Herbert concluded that heath professionals were frequent and skillful users of computer technology.

The respondents most frequently have more than 10 years experience or are newcomers to the field with less than 3 years of experience.

Injury prevention and control practitioners focus mainly on the area of prevention. The focal point is not surprising, as discussed in Chapter I, Alberta is a leader in the area of prevention and control and this broader focus of injury control only began in 1998.

Perceived Challenges and Barriers

The majority of injury prevention and control practitioners in this study indicate lack of time (50.9%), lack of resources (50.3%), and geographic distance (32.1%) as the major barriers to participation. As described by Cross (1981) these can be categorized as situational barriers. These are barriers due to the circumstances of the learner. These barriers have also been identified by other authors such as McDaniel (1986) and Hebert (1999). McDaniel (1986) found the primary barriers were time constraints, availability and variety of classes, and access to programs. Herbert's (1999) findings also revealed time constraints as a barrier.

The barriers found in this study, lack of time, lack of resources and geographic distance, are situational barriers and as discussed in Chapter II removal of these barriers does not guarantee participation.

Important aspects of the respondents work revealed by thematic analysis were education, networking, programming and research. In addition, marketing the field was also noted as important. These aspects and their perceived

importance may have more to do with the fact that the field of injury prevention and control is so young.

Perceived Content Needs

As discussed, respondents indicated that they need educational opportunities that focus on intervention strategies, program evaluation, injury statistics, and program implementation. In terms of educational needs to improve injury control practices, risk factor identification, knowledge about the major causes of injury, determining the causes of injury and countermeasure/intervention selection were identified as most important. In the 1999/00 review of programs discussed in Chapter I some elements of those programs can be linked to the identified needs noted above, for example, the majority of the courses presented content on intervention strategies and injury data and sources. However, several areas identified in this study are not discussed by some of programs currently in existence, such as program evaluation and risk factor identification.

Factors Relating to Delivery and Enrollment

Face-to-face workshops and internet-based methods of delivery were chosen by the respondents as the preferred option and course content was rated as the most influential when deciding to enroll. This factor, course content, was also identified by Herbert (1999) as being influential in the decision to enroll. In addition, this author found the decision to enroll in courses was most often influenced by how relevant and applicable to work and practice the course is.

These choices may relate to the newness of the field and the diversity within the field. Face-to-face workshops and internet-based methods offer the newcomer to the field the opportunity to build a network of colleagues within the field. These methods also facilitate a certain degree of interaction, which further facilitates the building of a network. The influence of course content in making the decision to enroll enables the newcomer and the practitioner from a variety of settings to determine whether the educational opportunity will meet their individual needs.

Conclusions

The following conclusions are drawn from the findings:

1. Barriers to participation are lack of time, lack of resources, and geography.
2. Injury prevention and control practitioners have a need for education that focuses on the topic areas of intervention strategies, program evaluation, injury statistics, and program implementation.
3. Injury prevention and control practitioners need education and training in risk factor identification, major cause of injury, determining causes of injury, and countermeasure/intervention selection.
4. The preferred delivery mechanism is a face-to-face workshop.

Recommendations

It is crucial that the injury prevention and control field address the educational needs and barriers of its practitioners to develop a critical mass of knowledgeable practitioners. The development of a common syntax,

establishment of a stronger network of injury prevention and control practitioners, and use of a scientific approach to injury prevention and control is a strategy that can be used to develop this critical mass (ACICR & Plan-it-safe, 1999). The following recommendations based on the findings of this study are offered:

1. The first emphasis to address the educational needs and barriers should focus on the development of flexible curriculum for adult learners. A flexible format for delivery would enable the delivery of the curriculum across Canada using various delivery mechanisms potentially lessening some of the identified barriers. A flexible program would enable the instructor to tailor the content and topics to particular segments of injury prevention and control: prevention, emergency medical services, acute care and rehabilitation.
2. Courses should focus on identified needs and where possible, utilize existing resources. In Canada, there are only a handful of deliverers of and courses on injury prevention and control currently being offered where possible these should be revised to focus on the identified needs.
3. Courses should focus on one target group of injury prevention and control practitioners. With nearly 85% of the respondents indicating that the focus of their work is in the area of prevention the curriculum should focuses on prevention.
4. Courses offered should cover the core elements of the field of injury prevention and control such as program implementation and an

understanding of injury data and sources. If the field is to grow it must build a base level of competence in these core elements.

5. Results of this study should be distributed to colleges, universities, and injury prevention and control agencies for review for the purposes of curriculum planning and course development. The field of injury prevention and control is very young and not well known. It is a potential new market for educational opportunities for adults.
6. Organizations employing injury prevention practitioners should encourage, support, and provide resources such as training allowances and Internet capabilities, for furthering practitioner educational development. In order to build the field and become more effective in prevention and control efforts education and training is essential.
7. Needs assessment must be a continuing process with some form of formal needs assessment happening on a regular basis. Participation in these assessment must be broad based and include representatives from all segments of injury prevention and control as well as objective observers who interact with these segments.

Delimitations and Limitations

This study restricts itself to an examination of the perceived educational needs of injury prevention and control practitioners in Canada who are identified by the Canadian Collaborating Centre for Injury Prevention and Control (CCCIPC). It does not subject individuals to a test or other form of measurement to determine needs.

The true number of injury prevention and control practitioners in Canada is not known. Each regional representative of the CCCIPC identified 50-200 potential respondents from its mail list. The results reflect only those of the respondents and may not be truly generalizable across the profession of injury prevention and control.

Although, this study was done in conjunction with the development of a national curriculum project, it does not report on the development process.

The measurement of perceived needs poses limitations to the study. The results of the study are influenced by the respondent's ability to evaluate their educational needs. Areas of need may be overlooked if respondents are unaware that they are deficient in an area.

Data gathered by use of the survey method were solicited by purposeful sampling and the variables of age and sex were not controlled. It was not possible therefore; to make any comparison based on these variables. This type of purposeful or convenience sampling was used with the belief that this would yield a sufficient response rate to determine needs.

Unfortunately, surveys do not allow for probing into respondent's opinions and feelings about the topics outlined in the survey. In addition, once the survey is distributed it is not possible to modify items to make them clearer to potential respondents. These delimitations and limitations were acceptable to ACICR and the CCCIPC and this researcher.

Suggestions for Further Research

1. It is suggested that this study be replicated on a larger scale using a larger sample reflecting the field of injury prevention and control.
2. It is suggested that further needs assessments be undertaken using other methods to gather additional qualitative information to enrich the quantitative data provided in this study.
3. It is suggested that evaluation studies of the current educational programs be undertaken to explore the interrelationships between the content offered and practitioner skill and knowledge.

A Closing Thought

The challenges faced by the field of injury prevention and control require that practitioners develop a consistent level of competence. If the field of injury prevention and control is to truly impact the health of Canadians, practitioners must be competent in their functional roles and also understand the overall framework of injury control and how their organization contributes (Schrick, 1992).

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APPENDIX A

NEEDS ASSESSMENT SURVEY FOR INJURY CONTROL PRACTITIONERS

Needs Assessment Survey for Injury Control Practitioners

1. Please provide us with information about your current employment. **Circle one number from each column.**

Type of employment	Employer	Location
1. consultant	1. academic (university, etc.)	1. British Columbia
2. educator	2. acute care hospital	2. Alberta
3. public health nurse	3. community health centre	3. Saskatchewan
4. injury prevention/control 5. co-ordinator	4. community agency	4. Manitoba
6. health promotion co-ordinator	5. federal government	5. Ontario
7. safe community co-ordinator	6. municipal government	6. Quebec
8. physician	7. non-profit organization	7. New Brunswick
9. researcher	8. private industry / business	8. Newfoundland/Labrador
10. program coordinator	9. professional association	9. Prince Edward Island
11. police officer	10. provincial government	10. Nova Scotia
12. fireman	11. regional government	11. Nunavut
13. engineer	12. regional health authority	12. Northwest Territories
14. architect	13. self-employed	13. Yukon Territory
15. emergency medical services	14. advocacy group	
16. student	15. other (specify)	
17. volunteer		
18. data analyst		
19. acute care nurse		
20. social services		
21. rehabilitation		
22. other (specify)		

2. Please indicate your educational background? **Circle the number of all that apply and indicate your area of specialty.**

Type of Background	Area of Specialty
1) High School	_____
2) Technical Training	_____
3) Certificate	_____
4) Professional Diploma	_____
5) Bachelor's Degree	_____
6) Master's Degree	_____
7) PhD	_____
8) MD	_____
9) Other: please describe	_____
10) Other: please describe	_____

3. Please indicate your use of computers for the following statements. **Circle one number for each statement.**

	Never	Monthly or less	Weekly	Daily
I use a computer in my work.	1	2	3	4
I use a computer outside of work.	1	2	3	4

4. Rank your skill level with the following computer applications from 4 = Highly skilled to 1 = No skill. **Circle one number for each statement.**

	No Skill	Some Skill	Average Skill	Highly Skilled
Word processing programs	1	2	3	4
Spreadsheet programs	1	2	3	4
Database programs	1	2	3	4
Internet	1	2	3	4
E-mail	1	2	3	4
Power Point	1	2	3	4

5. How long have you been involved in safety related / injury control activities? **Circle one number only.**
   1) Never
   2) 1 to 3 years
   3) 4 to 6 years
   4) 7 to 10 years
   5) more than 10 years

6. In which safety related / injury control areas have you been involved? **Circle all that apply.**
   1) None
   2) Prevention
   3) Emergency Medical Services
   4) Acute Care
   5) Rehabilitation
   6) Research
   7) Advocacy
   8) Other: please describe _____

7. What would you suggest is the most important aspect of your work in improving a population's safety and reducing the effects of injury?

_____

_____

_____

8. In your opinion, what is the biggest difficulty in improving a population's safety and reducing the effects of injury?

_____

_____

_____

9. What difficulties do you encounter in your own safety-related / injury control activities?

_____

_____

_____

10. What has made it difficult for you to participate in educational opportunities in the field of injury control? **Rank the following barriers in order of importance with 1 = greatest barrier and 6 = smallest barrier.**

__ lack of time
__ lack of financial resources to attend
__ lack of support from my organization / employer
__ geographic distance
__ did not know they existed
__ focus of current educational opportunities offered did not match my needs
__ other (please specify)_____

11. Please identify any safety related / injury prevention and control educational activities you have participated in over the past two years.

Education Activity	Education Provider
_____	_____
_____	_____
_____	_____
_____	_____

12. What type of educational curriculum/program would help you perform your safety-related / injury control-related job duties better?

_____

_____

_____

13. What type of educational curriculum/program would help the people with whom you work most often (co-workers and/or people who work with you) perform their safety-related / injury control-related job duties better?

_____

_____

_____

14. What are your educational needs in the following safety-related / injury control areas? Please rate each of the following topic areas from 5 = High Priority to 1 = Low Priority. The higher the priority, the closer to five you should rate it. **Circle the number which best reflects your view.**

	Low Priority	Somewhat a Priority	Average Priority	Above Average	High Priority
Program planning	1	2	3	4	5
Program Implementation	1	2	3	4	5
Program evaluation	1	2	3	4	5
Community development	1	2	3	4	5
Injury statistics	1	2	3	4	5
Injury surveillance	1	2	3	4	5
Intervention strategies	1	2	3	4	5
Principles of injury control	1	2	3	4	5
Health promotion theory	1	2	3	4	5
Cost of injury	1	2	3	4	5
Other (specify) _____	1	2	3	4	5
Other (specify) _____	1	2	3	4	5

15. How important do you feel the following topics are in terms of improving safety-related / injury control practices? Please rate each of the following concepts in injury control from 5 = High Importance to 1 = Low Importance. The higher the importance the closer to five you should rate it. **Circle the number which best reflects your view.**

	Low Importance	Somewhat Important	Average Importance	Above Average Importance	High Importance
Injury definition	1	2	3	4	5
Major causes of injury	1	2	3	4	5
Injury triangle (severity by frequency)	1	2	3	4	5
Sources of injury data	1	2	3	4	5
Surveillance systems	1	2	3	4	5
Risk factor identification	1	2	3	4	5
Determining the causes of injury	1	2	3	4	5
Countermeasure/ intervention selection	1	2	3	4	5
Behavior change models	1	2	3	4	5
Injury statistics	1	2	3	4	5
Injury outcomes / disability	1	2	3	4	5
History of strategies for reducing injury	1	2	3	4	5
Intentional injuries/violence	1	2	3	4	5
Other (specify) _____	1	2	3	4	5

16. What delivery mechanism do you think would be **most** successful in terms of meeting the learning outcomes of the participants? **Circle one number only.**

1) face to face workshop(s)
2) video-conferencing
3) internet-based
4) summer school
5) full or part-time credit program
6) distance education / correspondence
7) other (please specify_____

17. Please list any other educational priorities you believe would improve the National Curriculum for Injury Control in Canada.

_____

_____

_____

_____

18. How important are the following items when deciding whether to enroll in an educational opportunity? Please rate each of the following from 5 = High Importance to 1 = Low Importance. The higher the importance the closer to five you should rate it. **Circle the number which best reflects your view.**

	Low Importance	Somewhat Important	Average Importance	Above Average Importance	High Importance
Course content	1	2	3	4	5
Self-paced schedule	1	2	3	4	5
Availability of on-line course	1	2	3	4	5
Quality of instructors	1	2	3	4	5
On-going access to instructors	1	2	3	4	5
Employer support	1	2	3	4	5
Availability of course credit	1	2	3	4	5
Cost	1	2	3	4	5
Time commitment required	1	2	3	4	5
Location (away from home)	1	2	3	4	5
Other (specify) _____	1	2	3	4	5
Other (specify) _____	1	2	3	4	5

19. Please provide us with any other comments or suggestions for the development of a Canadian curriculum on injury control?

_____

_____

_____

Thank you very much for taking the time to respond!

Please return your completed survey to:

Curriculum Needs Assessment
Alberta Centre for Injury Control and Research
University of Alberta, 4075 EDC, 8308 – 114 Street
Edmonton, Alberta T6G 2V2
Phone: (780) 492-6019 Fax: (780) 492-7154
Email: acicr@ualberta.ca

APPENDIX B

COVER SHEET OF INTRODUCTION

Please help us improve the safety of Canadians by completing this needs assessment for the development of a Canadian Curriculum for Injury Prevention and Control.

In early 1999, a number of Canadian Centres for injury prevention and control gathered in a network. The Canadian Collaborative Centres for Injury Prevention and Control (CCCIPC) was formed to address common infrastructure needs for injury prevention and control across Canada. The first initiative to result from the collaboration is the development of a national injury control curriculum. Funded by Health Canada, the curriculum project is a nationwide three-year initiative to:

1) design and develop a flexible modular curriculum for adult learners aimed at intentional and unintentional injury prevention and control, and
2) develop, pilot and evaluate a workshop version of the curriculum in four locations across Canada.

The curriculum is meant for adult learners who, because of their functions or responsibilities, are likely to conduct research activities or develop, implement or evaluate programs aimed at improving safety and reducing the frequency and severity of both intentional and unintentional injury. It includes to name but a few, people working in the field of health and social services including public health; emergency measures and medical services including treatment and rehabilitation, justice and public security, oocupational health and safety; municipalities and their services including urban planning, engineering, transportation, etc.; as well as the policy makers.

The curriculum project is the joint responsibility of the Alberta Centre for Injury Control and Research (ACICR) in Edmonton and Plan-it-Safe: the Child & Youth Injury Prevention Centre at the Children's Hospital of Eastern Ontario in Ottawa. In addition, the project's advisory group consists of representatives from the:

- British Columbia Injury Prevention & Research Unit, Centre for Community Child Health Research
- Saskatchewan Institute on Prevention of Handicaps
- IMPACT (Injuries Manitoba - Prevention of Adolescent and Childhood Trauma), the Injury Prevention Centre for the Children's Hospital of Winnipeg
- Securite dans les milieux de vie, Centre de Sante publique de Quebec
- Nova Scotia Child Safety & Injury Prevention, IWK Grace Health Centre

The first step in the project is a needs assessment to determine the content and delivery mechanisms that will meet the needs of current and future injury control practitioners and professionals. We invite your input in identifying priority topics, as well as educational and support needs. Please complete and return the attach survey by 15 April 2000. The data from the needs assessment will be reviewed and analyzed by the ACICR Research Associate only. The results of the needs assessment will be reported only in collated form without any individual attributions and made available on-line and through various injury prevention and control related newsletters. If you have any questions regarding the project, please contact, Shannon McCourt at shannon.mccourt@ualberta.ca. If you have any questions regarding the graduate work associated with this project please contact Dr. Paula Brook, University of Alberta, Faculty of Education at 492-7949

Return your completed survey to:

Alberta Centre for Injury Control and Research
University of Alberta, 4075 EDC, 8308 – 114 Street
Edmonton, Alberta T6G 2V2Phone: (780) 492-6019 Fax: (780) 492-7154
Email: acicr@ualberta.ca

Thank you for your participation!

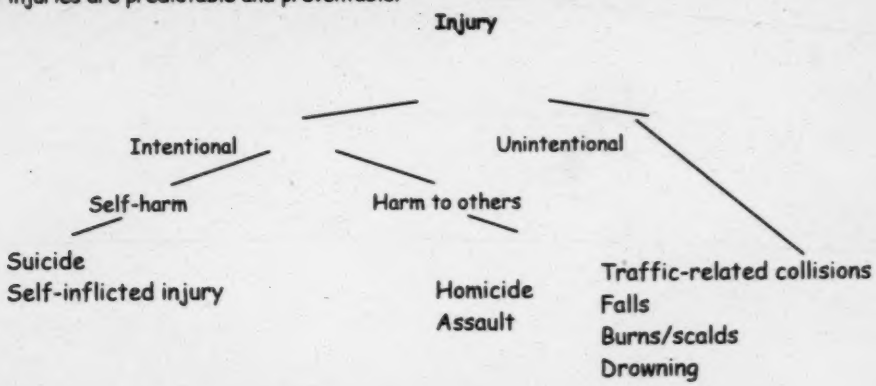
APPENDIX C

BACKGROUND DOCUMENT FOR NON-TRADITIONAL INJURY PREVENTION AND CONTROL PRACTITIONERS

In order to assist you with the needs assessment, the CICC has compiled an information overview on injury.

What is an Injury?

Injury is the number one killer of Canadians under the age of 45 years. The financial burden of injuries on Canadians amounts to approximately $14.3 billion per year. Injuries, whether intentional or unintentional, fatal or non-fatal result in tremendous financial and productivity costs in Canada, and inflict enormous personal burdens on the injured and their family. Both types of injuries are predictable and preventable.



Like a disease, an injury involves an interaction between a person and their environment. Injuries are the result of a transfer of energy (e.g., mechanical, thermal, chemical, electrical) or an absence of oxygen or heat that results in damage to the human body or death. For example, a motor vehicle crash involves the transfer of mechanical (or kinetic) energy from the suddenly decelerating car to the driver or passenger. Not all injuries kill and not all injuries can be repaired - some lead to life-long physical and cognitive disabilities.

Injuries are not accidents.

While every culture has its own beliefs about why injuries happen, it is common for people to explain injuries as acts of fate, or "freak accidents". However, studies have shown that these events are predictable. Because they are predictable, they should be preventable using interventions that reduce the risk of injury by modifying an individual's behavior or strengthening his/her resistance, modifying the object transferring the energy or some other aspect of the environment (physical, social or economic). Thus injuries can be controlled by either preventing the event from happening in the first place (gates around swimming pools), minimizing or eliminating the damage done by the energy exchange (wearing a helmet while riding a bicycle) or helping to minimize the severity of an injury or repair the damage once it occurs (emergency medical or acute care services).

What is "Injury Control"?

INJURY CONTROL involves preventing injuries as well as minimizing the negative consequences of injuries that occur. Injury control describes the full continuum of activities from injury prevention through to pre-hospital emergency medical services, acute emergency care and rehabilitative services.

Who Works in Injury Control?

Increasingly, the magnitude and impact of the injury problem is being recognized in Canada. In the last five to ten years, provincial centres have been established, which, in collaboration with health care stakeholders all over the country, are dedicated to injury prevention, treatment and rehabilitation. Creating safe homes, workplaces, and communities involves professionals from a variety of fields working together to prevent injuries from happening. Health professionals and community service agencies deliver safety information to the community and employers implement safe practices for their workers. Government officials develop legislation and policy to ensure safe practices on the road, in the workplace and in our communities. Engineers and manufacturers design and produce safer products and police officers enforce laws designed to protect the public from harm.

When an injury is serious or life-threatening, emergency medical services may be called to the scene to remove the person from harm, resuscitate and stabilize vital body functions, and transport the injured individual to hospital. Bystanders trained in first aid, 9-1-1 systems, police, fire, and ambulance response are all examples of emergency services.

In hospitals or at large tertiary acute care facilities, doctors, nurses, and trauma specialists attempt to minimize and repair the damage caused by the injury, and return the patient to a condition where he or she can be transferred to a long-term care or rehabilitation facility or back home.

Rehabilitation takes place both in institutional settings and in the community. It involves professionals trained in restoring speech, memory, and other brain and bodily functions. Therapists of many types work to assist the injured person in regaining the ability to carry out activities of daily living, and improve their emotional well being.

APPENDIX D

TABLE 15 – DEMOGRAPHIC PROFILE BY REGION

Table 15

Demographic Profile by Region

Region	Type of Employment	N(%)	Type of Employer	N(%)
British Columbia	Public Health Nurse	11(22.4)	Regional Health	10(20.4)
	Educator	6(12.2)	Community Health	7(14.3)
	Program Coordinator	5(10.2)	Acute Care Hospital	5(10.2)
	Consultant	3(6.1)	Non-profit	5(10.2)
	Fireman	3(6.1)	Academic	4(8.2)
	Physician	3(6.1)	Provincial Government	3(6.1)
	Researcher	2(4.1)	Community Agency	3(6.1)
	IPC Coordinator	2(4.1)	Municipal Government	3(6.1)
	Acute Care Nurse	1(2.0)	Industry/Business	1(2.0)
	Social Services	1(2.0)	Missing	3(6.1)
	Safe Community	1(2.0)	Total	49(100.0)
	Other	10(20.4)		
	Total	49(100.0)		
Alberta	Program Coordinator	17(18.5)	Regional Health	21(22.8)
	IPC Coordinator	8(8.7)	Academic	14(15.2)
	Consultant	8(8.7)	Municipal Government	11(12.0)
	Physician	6(6.5)	Non-profit	10(10.9)
	Health Promotion	6(6.5)	Acute Care Hospital	8(8.7)
	Researcher	5(5.4)	Industry/Business	7(7.6)
	Educator	4(4.3)	Provincial Government	5(5.4)
	Acute Care Nurse	4(4.3)	Community Health	5(5.4)
	Safe Community	3(3.3)	Self-employed	4(4.3)
	Engineer	3(3.3)	Federal Government	1(1.1)
	Data Analyst	2(2.2)	Professional Assoc.	1(1.1)
	Fireman	2(2.2)	Other	3(3.3)
	Public Health Nurse	1(1.1)	Missing	2(2.2)
	Rehabilitation	1(1.1)	Total	92(100.0)
	Police Officer	1(1.1)		
	Emergency Medical	1(1.1)		
	Missing	3(3.3)		
	Other	17(18.5)		
	Total	92(100.0)		
Saskatchewan	Emergency Medical	8(28.6)	Non-profit	10(35.7)
	Program Coordinator	7(25.0)	Regional Health	4(14.3)
	IPC Coordinator	2(7.1)	Industry/Business	3(10.7)
	Educator	2(7.1)	Acute Care Hospital	2(7.1)
	Police Officer	2(7.1)	Provincial Government	2(7.1)
	Safe Community	1(3.6)	Federal Government	2(7.1)
	Rehabilitation	1(3.6)	Other	4(14.3)
	Other	5(17.9))	Missing	1(3.6)
	Total	28(100.0)	Total	28(100.0)

(table continues)

Manitoba	Public Health Nurse	8(16.0)	Regional Health	12(24.0)
	Program Coordinator	7(14.0)	Academic	6(12.0)
	Educator	5(10.0)	Community Health	6(12.0)
	Health Promotion	4(8.0)	Municipal Government	4(8.0)
	Police Officer	3(6.0)	Non-profit	4(8.0)
	Emergency Medical	3(6.0)	Provincial Government	4(8.0)
	Consultant	2(4.0)	Acute Care Hospital	3(6.0)
	Physician	2(4.0)	Federal Government	3(6.0)
	Researcher	1(2.0)	Industry/Business	2(4.0)
	Acute Care Nurse	1(2.0)	Self-employed	1(2.0)
	IPC Coordinator	1(2.0)	Professional Assoc.	1(2.0)
	Fireman	1(2.0)	Other	4(8.0)
	Rehabiltation	1(2.0)	Total	50(100.0)
	Social Services	1(2.0)		
	Other	10(20.0)		
	Total	50(100.0)		
Ontario	Public Health Nurse	16(25.8)	Municipal Government	8(12.9)
	IPC Coordinator	8(12.9)	Non-Profit	7(11.3)
	Program Coordinator	5(8.1)	Provincial Government	7(11.3)
	Health Promotion	4(6.5)	Community Agency	6(9.7)
	Emergency Medical	4(6.5)	Acute Care Hospital	5(8.1)
	Consultant	3(4.8)	Regional Government	5(8.1)
	Researcher	2(3.2)	Regional Health	3(4.8)
	Volunteer	2(3.2)	Community Health	3(4.8)
	Educator	1(1.6)	Federal Government	3(4.8)
	Rehabiltation	1(1.6)	Self-employed	1(1.6)
	Safe Community	1(1.6)	Academic	1(1.6)
	Other	15(24.2)	Total	62(100.0)
	Total	62(100.0)		
Quebec	Physician	15(24.2)	Provincial Government	18(29.0)
	Program Coordinator	6(9.7)	Regional Health	9(14.5)
	Researcher	6(9.7)	Community Health	9(14.5)
	IPC Coordinator	4(6.5)	Acute Care Hospital	3(4.8)
	Student	4(6.5)	Community Agency	3(4.8)
	Public Health Nurse	3(4.8)	Non-Profit	3(4.8)
	Social Services	3(4.8)	Municipal Government	2(3.2)
	Volunteer	2(3.2)	Industry/Business	2(3.2)
	Emergency Medical	2(3.2)	Self-employed	2(3.2)
	Health Promotion	1(1.6)	Federal Government	1(1.6)
	Rehabiltation	1(1.6)	Academic	1(1.6)
	Police Officer	1(1.6)	Advocacy Group	1(1.6)
	Other	14(22.6)	Other	8(12.9)
	Total	62(100.0)	Total	62(100.0)
Nova Scotia	Program Coordinator	2(16.7)	Acute Care Hospital	2(16.7)
	Educator	2(16.7)	Provincial Government	2(16.7)
	Consultant	1(8.3)	Academic	2(16.7)
	Acute Care Nurse	1(8.3)	Regional Health	2(16.7)
	Public Health Nurse	1(8.3)	Federal Government	2(16.7)
	IPC Coordinator	1(8.3)	Non-profit	1(8.3)
	Other	4(33.3)	Other	1(8.3)
	Total	12(100.0)	Total	12(100.0)
Northwest Territories	Physician	2(28.6)	Regional Health	4(57.1)
	IPC Coordinator	1(14.3)	Acute Care Hospital	2(28.6)
	Other	4(57.1)	Other	1(14.3)
	Total	7(100.0)	Total	7(100.0)
Yukon	Fireman	1(50.0)	Municipal Government	1(50.0)
	Physician	1(50.0)	Other	1(50.0)
	Total	2(100.0)	Total	2(100.0)